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| 10/849,692 | 05/19/2004 | Jared L. Zerbe | RA328 . P . US | 7648 |
| 38489 7590 01/04/2008 SILICON EDGE LAW GROUP, LLP 6601 KOLL CENTER PARKWAY SUITE 245 PLEASANTON, CA 94566 | | | EXAMINER CHERY, DADY | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/849,692 | Applicant(s) ZERBE, JARED L. | |
| | Examiner Dady Chery | Art Unit 2616 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1, 3-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

This communication is responsive to the amendment filed on 11/14/2007.

Response to Arguments

1. Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 16 – 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Horowitz et al. (US Patent 6,321,282, hereinafter Horowitz).

Regarding claim 16, Horowitz discloses a *transceiver* (**Fig. 16, 23, 21**)
comprising:

a reference clock source (498) that produces a reference clock;

*a loop circuit (500) coupled to the reference clock source, wherein the loop circuit
derives*

a plurality of clocks ($C_1(0^0)$, $C_2(+45^0)$) of different clock phases from the reference clock;

a transmit mixer (516) coupled to the loop circuit, wherein the transmit mixer derives a transmit clock (FBCLK) from the clocks of different clock phases,

the transmit mixer(516) including a phase control port (392);

a transmit phase controller (392,400) coupled to the phase control port, wherein the transmit phase controller issues transmit-phase control signals via the phase control port to alter the phase of the transmit clock,

and a transmitter(Fig. 16, Transmit DLL/PLL) that transmits data samples (514) synchronized with the transmit clock (Col. 11, 47 -63 and Col. 19, lines 62, Col. 20, lines 20).

Regarding claim 17, Horowitz discloses *the transceiver wherein the transmitter phase controller issues a plurality of the transmit-phase control signals as the transmitter transmits the data samples (Col. 11, 47 -63 and Col. 20, lines 4 – 13).*

Regarding claim 18, Horowitz discloses *the transceiver (Fig. 16, 21, 23), further comprising:*

a receive mixer (520) coupled to the loop circuit (500), wherein the receive mixer derives a receive clock from the clocks of different phases (FBCLK);

a receive phase controller (392) coupled to the second phase control port, wherein the receive phase controller issues receive-phase control signals via the second phase control port to alter the phase of the receive clock;

a receiver (514) that receives data samples synchronized with the receive clock.(see Col. 20, lines 17 – 31).

Regarding claim 19, Horowitz discloses *the transceiver (Fig. 13, 334) further comprising a resynchronizer that produces the transmit data synchronized with the transmit clock from transmit data synchronized with a second clock (Col. 8, lines 4 – 12).*

Regarding claim 20, Horowitz discloses the transceiver (Fig. 16) *comprising a serializer (401) disposed between the resynchronizer and the transmitter (Col. 11, lines 46 –63).* Where the Equalization control register is considered as the serializer.

3.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-15, 21 and 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thibeault et al. (US Application 20030117183, hereinafter Thibeault) in the view of Horowitz et al. (US Patent 6,321,282 hereinafter Horowitz).

Regarding claims 1 and 26, Thibeault discloses a system comprising:

a first transmitter (Fig. 1, 10) having a first data input terminal that receives first transmit data, a first transmit clock terminal that receives a first transmit clock of a transmit frequency, and a first data output terminal that transmits the first transmit data synchronized with the first transmit clock,

a second transmitter (Fig. 3, 12) having a second data input terminal that receives second transmit data, a second transmit clock terminal that receives a second transmit clock of the transmit frequency, and a second data output terminal that transmits the second transmit data synchronized with the second transmit clock, (Page 1, [0014]- [0015]). Where Thibeault discloses sets of input and output data that transmit data, which is synchronized a clock signal. Which has the same function as the instant application.

Thibeault fails to teach a phase adjustment circuit that derives the first transmit clock from a reference clock signal and adjusts the first transmit clock to vary the phase of the first transmit data with respect to the second transmit data.

Wherein the phase-adjustment circuit dynamically varies the phase of the first transmit data with respect to the second transmit data.

However, Horowitz teaches a phase adjustment circuit that derives the first transmit clock from a reference clock signal and adjusts the first transmit clock to vary the phase of the first transmit data with respect to the second transmit data (Col. 15, lines 31 –52).

Wherein the phase-adjustment circuit dynamically varies the phase of the first transmit data with respect to the second transmit data (Col. 20, lines 1 – 20).

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Horowitz into the teaching of Thibeault for the purpose of adjust any, all, or some combination of transmit signal characteristics, current swing and cross-talk **(Col. 8, lines 40 – 45).**

Regarding claims 3, 11, Thibeault discloses all the limitation of claim as applied above, except *the phase-adjustment circuit includes a phase mixer.*

However, Horowitz teaches *the phase-adjustment circuit includes a phase mixer* (Fig. 23, 516).

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Horowitz into the teaching of Thibeault for the purpose of adjust any, all, or some combination of transmit signal characteristics, current swing and cross-talk **(Col. 8, lines 40 – 45).**

Regarding claims 4, 12 and 27, Thibeault discloses all the limitation of claim 4 as applied above, except *the phase-adjustment circuit further includes a phase control circuit coupled to the phase mixer.*

However, Horowitz teaches *the phase-adjustment circuit further includes a phase control circuit coupled to the phase mixer* **(Fig. 23, 392).**

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Horowitz into the teaching of Thibeault for the purpose of adjust any, all, or some combination of transmit signal characteristics, current swing and cross-talk (**Col. 8, lines 40 – 45**).

Regarding claims 5 and 28, Thibeault discloses all the limitations of claim 5 as applied above, except *the phase-adjustment circuit includes a counter that issues periodic select signals to the phase mixer during transmission of at least one of the first and second transmit data.*

However, Horowitz teaches *the phase-adjustment circuit includes a counter that issues periodic select signals to the phase mixer during transmission of at least one of the first and second transmit data* (**Fig. 20,470 and Col. 15, lines 4 – 9**).

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Horowitz into the teaching of Thibeault for the purpose of adjust any, all, or some combination of transmit signal characteristics, current swing and cross-talk (**Col. 8, lines 40 – 45**).

Regarding claims 6, 14, 15, Thibeault discloses all the limitations of claim 5 as applied above, except *the phase-adjustment circuit includes a phase mixer, the system further comprising a locked-loop circuit connected to the mixer, and wherein the locked-loop circuit delivers a plurality of reference-clock phase vectors to the phase mixer.*

However, Horowitz teaches *the phase-adjustment circuit includes a phase mixer (fig. 23, 516), the system further comprising a locked-loop circuit (Fig. 23, 500) connected to the mixer, and wherein the locked-loop circuit delivers a plurality of reference-clock phase vectors ($C_1(0^0, +45^0)$ to the phase mixer (Col. 19, lines 62 – Col. 20, lines 20).*

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Horowitz into the teaching of Thibeault for the purpose of adjust any, all, or some combination of transmit signal characteristics, current swing and cross-talk (Col. 8, lines 40 – 45).

Regarding claim 7, Thibeault discloses the system (Fig. 17), further comprising:

a first transmission channel (S20a1) coupled to the first transmitter output terminal, wherein the first transmission channel conveys the first transmitted data;

a second transmission channel (S20b1) coupled to the second transmitter output terminal, wherein the second transmission channel conveys the second transmitted data;

a receiver (Fig. 27,112) having a receiver input node coupled to the first transmitter output terminal via the first transmission channel (20a1), wherein the receiver input node receives the first transmitted data, and wherein the receiver input node receives an artifact of the second transmitted data as crosstalk coupled from the second transmission channel to the first transmission channel (See Page 5,[0086] – [0087]).

Regarding claim 8, *Thibeault* a system (**Fig. 17**) comprising:

a transmitter (12) having a data input terminal that receives first transmit data,

a transmit clock (CLK0) terminal that receives a transmit clock of a transmit frequency,

and a data output terminal that transmits the first transmit data synchronized with the transmit clock;

a first communication (S20a1) channel coupled to the first data output terminal, wherein the first communication channel receives the first transmit data;

a first receiver (112) having a first receiver input node (20a1)coupled to the first data output terminal via the first communication channel, wherein the first receiver input node receives the first transmitted data from the transmitter;

a second communication channel (S20b1) that conveys second transmit data;

a second receiver (112)having a second receiver input (20b1)node coupled to the second communication channel (S20b1), wherein the second receiver input nodes receives the second transmit data and crosstalk artifacts of the first transmitted data

(See Page 5,[0086] – [0087]).

Thibeault fails to teach a phase adjustment circuit that derives the first transmit clock from a reference clock signal and adjusts the first transmit clock to vary the phase of the first transmit data with respect to the second transmit data.

Wherein the phase-adjustment circuit dynamically varies the phase of the first transmit data with respect to the second transmit data.

However, Horowitz teaches a phase adjustment circuit that derives the first transmit clock from a reference clock signal and adjusts the first transmit clock to vary the phase of the first transmit data with respect to the second transmit data (**Col. 15, lines 31 –52**).

Wherein the phase-adjustment circuit dynamically varies the phase of the first transmit data with respect to the second transmit data (Col. 20, lines 1 – 20).

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Horowitz into the teaching of Thibeault for the purpose of adjust any, all, or some combination of transmit signal characteristics, current swing and cross-talk (**Col. 8, lines 40 – 45**).

Regarding claim 9, Thibeault discloses the system (**Fig. 17**) of wherein the second communication channel conveys the second transmit data at the transmit frequency (**Page 5, [0086]**).

Regarding claim 10, Thibeault discloses all the limitations of claim 10, except the phase adjustment circuit dynamically varies the timing of the first transmit data with respect to the second transmit data.

However, Horowitz teaches *the phase adjustment circuit dynamically varies the timing of the first transmit data with respect to the second transmit data (Col. 15, lines 31 –52).*

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Horowitz into the teaching of Thibeault for the purpose of adjust any, all, or some combination of transmit signal characteristics, current swing and cross-talk **(Col. 8, lines 40 – 45).**

Regarding claim 21, Thibeault discloses *a method (fig. 18 and 19) comprising: transmitting first and second data signals timed (CLK0) to respective first and second transmit clocks to respective first and second receivers (500 and 502, Page 5, [0087] – [0089]) ;*

monitoring an output of the second receiver for errors induced by the first data signal (Page 5, [0092]); and adjusting, in response to the monitoring, the timing of the first transmit clock in relation to the second transmit clock (Page 6,[0093]- [0094]).

5. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thibeault in the View of Kamalov et al. (US Application 2004/0037569, hereinafter Kamalov).

Regarding claims 22 and 23, Thibeault discloses all the limitations of claims 22 and 23 except *the method of monitoring includes calculating the bit-error rate of the second receiver and adjusting reduces the bit-error rate.*

However, Kamalov teaches *a method of monitoring includes calculating the bit-error rate of the second receiver and adjusting reduces the bit-error rate (Page 1, [0010]).*

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to calculate the bit-error rate of the second receiver and adjust reduces the bit-error rate for the purpose of improving a transmission quality by determining the bit-error rate for a channel before forward and error correction **(Abstract).**

Regarding claim 24, Thibeault discloses comprising *dynamically adjusting the timing of the first transmit clock relative to the second transmit clock while transmitting the first and second data signals (Page 7, [0011] – [0012]).*

Regarding claim 25, Thibeault discloses a method comprising:

transmitting first, second, and third data signals timed to respective first and second transmit clocks to respective first and second receivers over respective first and second communication channels, wherein the first data signal induces crosstalk artifacts in the second communication channel (Fig. 17 –19 , Page 1, [004], and Page 5, [0086]-[0087]);

Thibeault fails to teach *adjusting the phase of the first transmit clock in relation to the second transmit clock while transmitting the first and second data signals.*

However, Horowitz teaches a *phase adjustment circuit that derives the first transmit clock from a reference clock signal and adjusts the first transmit clock to vary the phase of the first transmit data with respect to the second transmit data (Col. 15, lines 31 –52).*

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Horowitz into the teaching of Thibeault for the purpose of adjust any, all, or some combination of transmit signal characteristics, current swing and cross-talk (**Col. 8, lines 40 – 45**).

Regarding claim 29, Thibeault discloses a communication system (**Fig. 29**) comprising:

- a. *a first transmitter (18-1) driven by a first transmit clock (CLK0) signal of a first phase, the first transmitter adapted to transmit first data synchronized to the first transmit clock signal;*
- b. *a first communication channel (S40a)coupled to the first transmitter and conveying the first transmit data;*
- c. *at least one aggressor transmitter (18-2) driven by a second transmit clock signal of an aggressor data phase, the aggressor transmitter adapted to transmit second data synchronized to the second transmit clock signal;*

- d. a second communication channel (**S50a**) coupled to the second transmitter and conveying the second transmit data (See Page 7, [0110] – [0116]); and
- e. a victim receiver (**Fig. 17, 112**) coupled to the first communication channel and adapted to sample the first transmit data using a receive clock signal of a victim data phase, the victim receiver additionally receiving cross-talk artifacts of the second transmit data (**Page 5, [0086] – [0087]**);

Thibeault fails to disclose the step of wherein at least one of the aggressor transmitter and the victim receiver includes phase-adjustment circuitry adapted to alter the aggressor data phase relative to the victim data phase to reduce crosstalk from the aggressor transmitter to the victim receiver.

However, Horowitz teaches a phase adjustment circuit that uses one of the aggressor transmitter and the victim receiver includes phase-adjustment circuitry adapted to alter the aggressor data phase relative to the victim data phase to reduce crosstalk from the aggressor transmitter to the victim receiver (**Col. 15, lines 31 – 52**).

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Horowitz into the teaching of Thibeault for the purpose of adjust any, all, or some combination of transmit signal characteristics, current swing and cross-talk (**Col. 8, lines 40 – 45**).

6. Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thibeault in the view of Horowitz as applied to claim 29 above, and further in view of Cioffi (US Patent 5,887,032, hereinafter Cioffi).

Regarding claims 30 and 32, Thibeault discloses all the limitations of claims 30 and 31, except the crosstalk is FEXT and the crosstalk is NEXT.

However, Cioffi teaches the crosstalk is FEXT and the crosstalk is NEXT
(Abstract).

Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Cioffi into the teaching of Thibeault for the purpose of cancellation of crosstalk in data communication system **(Abstract).**

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dady Chery whose telephone number is 571-270-1207. The examiner can normally be reached on Monday - Thursday 8 am - 4 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Q. Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Dady Chery 12/27/2007


RICKY Q. NGO
SUPERVISORY PATENT EXAMINER